

Remarks

Claims 1-43, 45-58, 60 and 65-70 are allowed and remain pending. Claims 44, 59 and 61 remain pending. Claim 62 has been canceled without prejudice. Previously allowed Claims 63 and 64 are currently amended and remain.[RDI2] Claims 71-73 are new and remain.

Claims Rejections-35 USC 103(a)

Applicants traverse Examiner's rejection of claims 44, 59, 61 and 62 per 35 USC §103(a) as being unpatentable over Davids *et al.* (US Patent Application Publication 2003/0161571) in view of Schuppert *et al.* (US-PAT 5,280,189). When interpreting the current invention and the prior art, it is important to understand the plain meaning definitions of the terms transistor, phototransistor and photodiode. The plain meaning of the term "transistor" is a conventional transistor which is a semiconductor device in which current flow is modulated by voltage or current applied to electrodes. A phototransistor is a semiconductor controlled by light rather than an electrical stimulus. A photodiode is a diode that produces current in response to incident optical power. For operation, phototransistors and photodiodes are opto-electronic semiconductor elements and necessarily require optical input. A conventional transistor does not respond to optical input, but rather requires an electronic input in order to operate.

The examiner refers to Figs. 6A and 10A in Davids *et al.* The Description of the Drawings from paragraph [0005] of Davids *et al.* describes these figures as "cross-sectional views of a phototransistor and waveguide at various stages of fabrication". The invention disclosed in Davids *et al* is a single device comprising a waveguide and phototransistor; the phototransistor is not displaced from the waveguide. The current invention is a waveguide

photodetector coupled to a conventional transistor. According to the current invention, the “transistor body” of claims 44 and 61 may be substantially displaced from the waveguide. Davids *et al.* neither discloses nor suggests the essential limitation of the current invention requiring coupling to a conventional transistor. Claims 44 and 61 of the current invention explicitly require a “transistor body” as an essential limitation. The “transistor body” of claims 44 and 61 does not respond to optical input as would be required by a phototransistor. Applicants respectfully argue that the conductive structures cited by the Examiner do not couple the same elements covered by the current invention.

The invention disclosed in Schuppert *et. al.* is a photodiode. Schuppert *et. al.* neither discloses nor suggests the essential limitation of claims 44 and 61 of the current invention which each explicitly require “a transistor body”. The diode required in Claim 1 of Schuppert *et. al.* is necessarily a photodiode and is not consistent with the “transistor body” required as an essential limitation of the current invention; furthermore, the conventional transistor of claims 44 and 61 of the current invention do not respond to optical input as would be required by a photodiode. [RDJ5]Unlike the photodiode disclosed in Schuppert *et. al.*, the conventional transistor of claims 44 and 61 may be substantially displaced from the waveguide. Applicants respectfully argue that the conductive structures cited by the Examiner do not couple the same elements covered by the current invention.

Applicants have amended claim 59 to overcome Examiner’s rejection per 35 USC §103(a) as being unpatentable over Davids *et al.* in view of Schuppert *et al.*. The amended claim explicitly clarifies essential limitations of the current invention. As discussed above, both the phototransistors as disclosed in Davids *et al.* and photodiodes as disclosed in Schuppert *et al* respond to optical input. Claim 59 has been amended to require electronic input to electronic

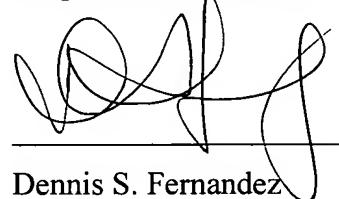
elements. Furthermore, the operation of the phototransistors as disclosed in Davids *et al.* and photodiodes as disclosed in Schuppert *et al.* requires that the phototransistors and photodiodes are not displaced from the waveguide . Claim 59 has been amended to require that the electronic elements be external to the waveguide and displaced from the waveguide.

Applicants cancel claim 62 without prejudice. Previously allowed claims 63 and 64 were dependent on canceled claim 62 and have been rewritten in independent form to incorporate the essential limitations of canceled claim 62.

New claims 71-73 are supported by the original specification.

In view of the foregoing Remarks, it is respectfully submitted by Applicants that all claims are now in condition for allowance. Reconsideration of the rejections is requested, and allowance of the claims at an early date is solicited. No additional fees are required by this paper. If the Examiner has any questions, kindly direct any such queries to the following phone number or email address.

Respectfully submitted,



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